## Claims

What is claimed is:

1.    A method for transmission control protocol (TCP) acceleration, comprising:

receiving an incoming acknowledgement packet belonging to a TCP session;

searching an upstream queue for queued acknowledgment packets belonging to the same TCP session; and

replacing one of the queued acknowledgment packets with the incoming acknowledgment packet in the position in the upstream queue occupied by the oldest of the queued acknowledgment packets if the incoming acknowledgment packet is not a duplicate of the queued acknowledgment packet.

2.    A method as claimed in claim 1, wherein replacing the oldest queued acknowledgment packet with the incoming acknowledgment packet occurs when the acknowledgment number field of the incoming acknowledgment packet is greater than the acknowledgment number field of the oldest queued acknowledgment packet.

3.    A method as claimed in claim 1, and further comprising:

dropping any remaining queued acknowledgment packets in the upstream queue after the oldest queued acknowledgement packet has been replaced by the incoming acknowledgement packet.

4.    A method as claimed in claim 1, wherein the oldest queued acknowledgment packet is replaced only if a drop count of the oldest queued acknowledgment packet has not yet exceeded a configurable drop threshold value.

5.    A method as claimed in claim 1, wherein queued acknowledgment packets that are explicit congestion notification (ECN) marked packets are not considered for dropping.

6.    A method as claimed in claim 1, wherein queued acknowledgment packets that are selective acknowledgment (SACK) packets are considered for dropping only when the incoming acknowledgment packet is not a duplicate of the queued SACK.

7.    A system for transmission control protocol (TCP) acceleration, comprising:

an upstream queue for queuing packets, including TCP acknowledgment packets;

means for receiving an incoming acknowledgement packet belonging to a TCP session;

means for searching an upstream queue for queued acknowledgment packets belonging to the same TCP session; and

means for replacing one of the queued acknowledgment packets with the incoming acknowledgment packet in the position in the upstream queue occupied by the

oldest of the queued acknowledgment packets if the incoming acknowledgment packet is not a duplicate of the queued acknowledgment packet.

8.     A system as claimed in claim 7, wherein replacing the oldest queued acknowledgment packet with the incoming acknowledgment packet occurs when the acknowledgment number field of the incoming acknowledgment packet is greater than the acknowledgment number field of the oldest queued acknowledgment packet.

9.     A system as claimed in claim 7, further comprising means for dropping the remaining queued acknowledgment packets in the upstream queue following the replacement of the oldest queued packet with the incoming acknowledgment packet.

10.     A system as claimed in claim 9, further comprising means for dropping the oldest queued acknowledgment packet in the upstream queue as long as the drop count of the oldest queued acknowledgment packet does not exceed a configurable drop threshold value.

11.     A system as claimed in claim 7, wherein queued acknowledgment packets that are explicit congestion notification (ECN) marked packets are not considered for dropping.

12.     A system as claimed in claim 7, wherein queued acknowledgment packets

that are selective acknowledgment (SACK) packet are considered for dropping only

when the incoming acknowledgment packet is not a duplicate of the queued SACK.